GrummanWorld

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Task Teams Help Put F-14D Right On Target

"The F-14D is really a new breed of 'cat,'" says Joe Henshall, director of the F-14A(PLUS) and F-14D production programs. "It has a completely different weapons suite. Climb into the cockpit and you won't recognize it."

The F-14D is a complex, high performance, fully integrated, all weather fighter. It's designed to easily accept new technologies. Grumman has been developing it since 1984, and the first F-14D Tomcat will roll off the production line at Calverton early next year. At this stage, the production program is right on schedule.

"The key element is task teaming," says Henshall.

"Task teaming is a process that has taken down the walls between groups," he says. Representatives from different functions — parts designers, production methods engineers, people in material, quality, planning, and procurement — teamed up. "Our task team sessions have a fair amount of 'hoot and holler,' but also a great deal of professional respect that has led to an F-14D production schedule we are convinced is being met."

Task teams were created for the "D" program to get back to the concept of designers rubbing shoulders with those who manufacture the planes. "On the F-14D program we had to do the job once and do it right," he says.

What came about was not one task team but an entire league, led by vehicle project engineer Nick Hadjigeorge and production operation manager Bob Ragusa. There is a team working on the dual chin-pod, another looking into the cockpit, one riding herd on weapons rails that carry the missiles, another concentrating on castings and machined parts, and others. Vendors such as Hughes, which builds the APG-71 weapons control system, and Kaiser, the maker of the cockpit displays, became task teammates, too.

"The first meetings of task teams resulted in a review of 3,300 engineering parts drawings," Henshall recalls. "That allowed us to identify when Product Operations would need the drawings and the teams came up with an engineering priority schedule to meet those requirements."

Engineering met the goals, Henshall says, "This orderly flow of engineering has resulted in no Methods or Tooling backlogs at any of our cost centers. There has been some growth in the engineering, but that has held close to the predicted growth."

Today, the F-14D program is at the major assembly stage. Grummanites are assembling the first production F-14D aft section in Stuart and the first forward section in Building 1 in Bethpage. All the major assemblies should reach Calverton in the month of June.

At the same time the full scale development program is continuing at a fast pace. Henshall says, "We're getting ready to go into a second critical Navy evaluation of the aircraft in the spring. It will be a one-month integrated flight operations evaluation."

It is possible that, during these operational evaluations, design modifications could be requested. The cockpit has undergone major redesign and the Navy flight crews may recommend changes in their evaluations.

"The task team structure will let us review change recommendations, evaluate their impact on cost and schedule and let us proceed toward our scheduled delivery," Henshall says.

He meets with the task-team chairman once a week and reviews proposed changes needed for safety, to make something work, or for specification compliance. This lets him assess how they will affect the cost and schedule of the program before they're approved.

With the A(PLUS) well into production and the first squadron soon to be deployed with the fleet, the Tomcat program is looking forward to the on-time delivery of the first of the new F-14D's early next year.

"We're right on schedule," says Henshall. "There are problems, but task teaming brings problems to the surface and lets us solve them. Task teaming refined the F-14D production plan to a fine art."

Assembling The Pieces. *The forward section of the first production F-14D is beginning to take shape in Building 1 in Bethpage. Checking the paperwork for this bulkhead are: (from L) production manager Jim Micco, senior assembler/ riveter Bob Chaloupecky and inspector Lorraine Moles. (Photo by Bob Settles)*

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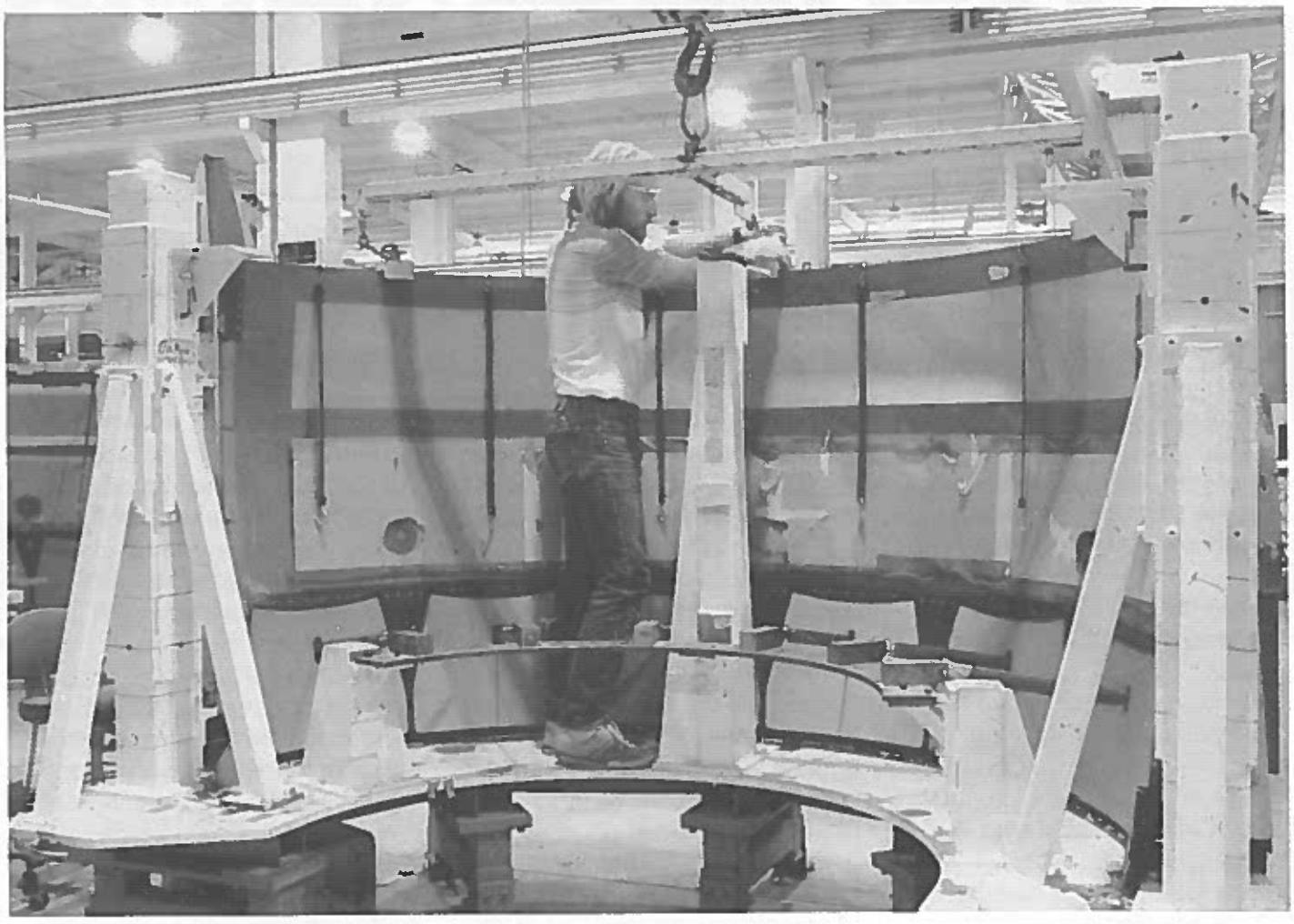
Airliner Sales Keep Transcowls Flying



An Uplifting Experience. *The translating cowl composite components are shipped to Stuart, Florida. Once there, they are assembled. This transcowl unit is being hooked to a hoist by Tom L'Heureux. It will be moved to the next fixture of the final assembly stage. (Photo by Jim Ferris)*

McDonnell Douglas' recent announcement of sales of its new MD-11 wide-body, long-range jetliner will undoubtedly add some "range" to the Grumman Translating Cowl (transcowl) program. The program closed the books on 1988 by delivering 21 more transcowls than General Electric's minimum requirement for the year, the first year of transcowl production.

Grumman is subcontracted to GE to build transcowls for the General Electric CF6-80C2 engine, one of the two power plant options offered for all wide-body aircraft.

Grumman has a firm purchase order from General Electric for 390 sets of transcowls and there are options for more. "We essentially have an open-ended contract with GE," says John Conover, the transcowl program manager. The General Electric CF6-80C2 engine powers the Boeing 747 and 767, the Airbus A300 and A310 wide-body airliners, as well as the McDonnell Douglas MD-11. "This engine will be around for the next 10 years. I think that sales could be well over 1,000 units."

This year, Grumman is on a steady production rate averaging just under 12 units a month after a hectic 1988. Last year the Grummanites in Milledgeville and Stuart, where the transcowls are built, delivered 71 units, or sets, of transcowls.

"We had originally hoped to produce 90 units by the end of 1988, but we had some technical difficulties with the acoustical requirements and that set us back about eight weeks," says Conover." But the 71 units were still a good demonstration of building up to production rate quickly."

They did that, Conover says, "by doing things in bunches, rather than in 'onesies and twosies'." The contract called for Grumman to get to a high production rate early. Instead of building one set of tooling for the first test article and then building production tooling later, Grumman built as many as 10 more of similar tools to go quickly into full production. "A lot of work and dedication went into this to reach rate production," Conover says. "We delivered that 71st unit less than 23 months from the contract signing."

Getting the 71st out the door was a multistate effort. "A lot of people worked really hard to make it happen," says Harold Sanders, assistant to the general manager of Milledgeville Operations, where the transcowl production process starts. "People here worked a bunch of weekends to pull this off."

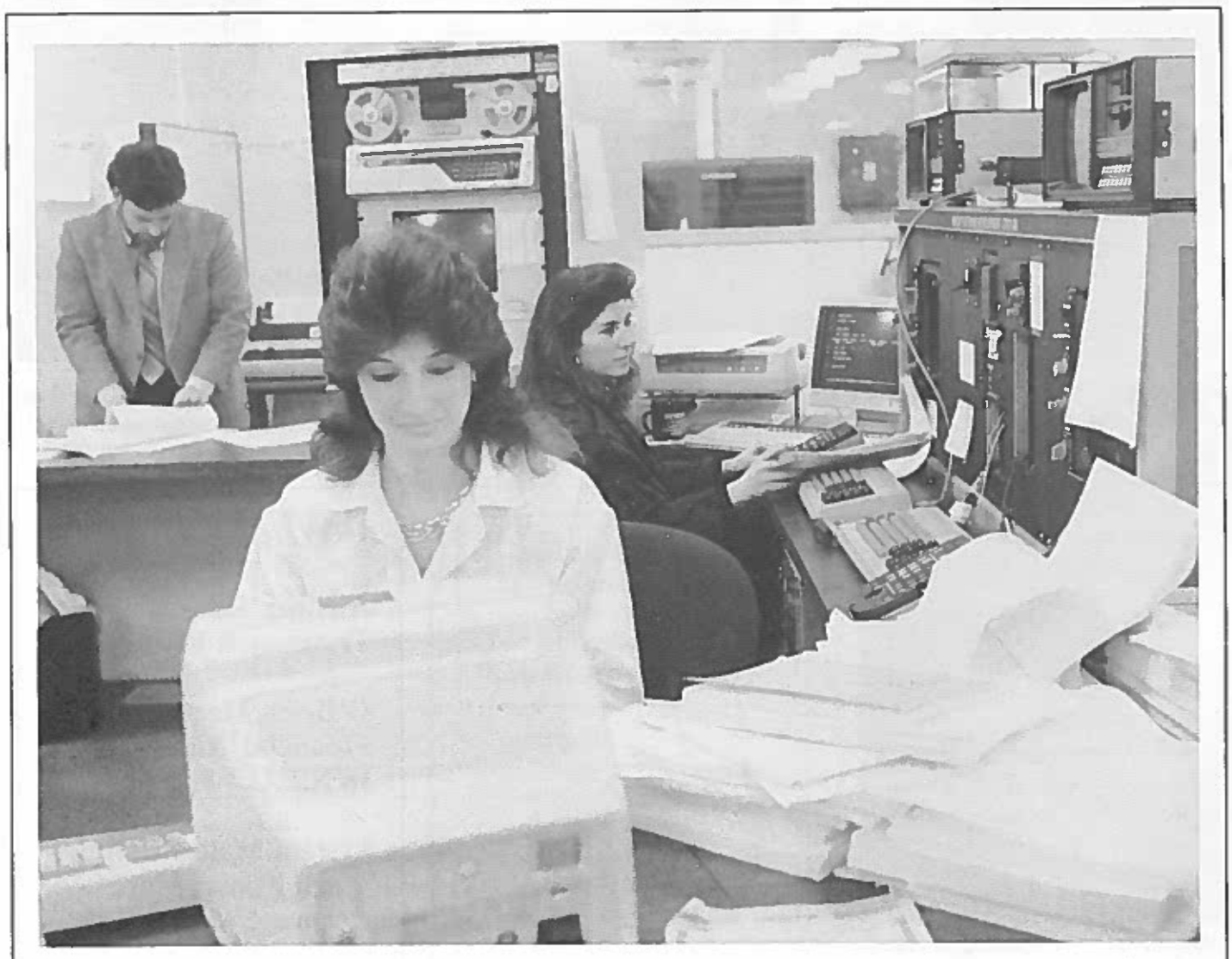
Milledgeville makes three basic composite components for each transcowl section. There are two identical sections to each shipset or unit.

Once the Grummanites in Milledgeville finished the bonded pieces for the 71 units, they sent them to Stuart, where the 55 Grummanites who on work the program added metal parts and assembled the transcowls.

The people on the transcowl program in Stuart also had a modification line going to add new hinges to finished transcowls at the same time they were running the production line.

According to Conover, Grumman is negotiating with General Electric and another transcowl subcontractor. If an agreement is reached, Grumman would supply transcowl components to the second contractor.

"Potentially, it could take effect next year and could double our current production rate," says Conover. "We're proceeding with a great deal of optimism."



Radar Blockers At Work. *Software engineers Frances Pratt (R), Denise Franzese and Louis Krell work in the EA-6B laboratories in Building 110 in Melville. They are testing tactical software, the computer programs that drive the systems that pinpoint and jam enemy electromagnetic emissions. (Photo by Jim Wagner)*

O'Brien Meets With Financial Analysts

Three Top Priorities For '89-'90: Joint STARS, Tomcat-21, BSTS

On Friday, February 17, Grumman Chairman John O'Brien and several other company executives spoke to financial analysts in New York City about Grumman's future. O'Brien discussed the political and economic environment of the defense business over the next few years and where Grumman fits into that environment. Highlights from that speech follow:

It seems to me that the end of the Reagan military build up has coincided with the end of the cold war. I believe that glasnost and the INF treaty are clearly saying "enough already," and perestroika is saying that Karl Marx had it wrong. One of the jokes being circulated in the Soviet Union today is a new definition of communism, which turned out to be the longest and most painful possible path from capitalism to capitalism.

Before this watershed moment, the world was spending about $930 billion a year on military forces. That's $2.5 billion a day, or about a $100 million an hour. I think that's going to change drastically — and in a world where half the people still go to sleep hungry every night, all of us can applaud that change.

Even if we were still in a period of cold war business as usual, the balance of trade and deficit problems in this country would have produced a flat or a declining military budget. Cuts were going to be made, but now they're going to be made in the context of historic negotiations to reduce forces in Europe.

'Arms reduction, budget pressures and technical risk all make delays of the ATA and ATF inevitable.'

And as these negotiations are going on, the economic competition between the United States and its traditional trading partners is about to get fierce. The Japanese have eaten our lunch in consumer durables and now they're taking aim on our leadership of advanced technologies, just as the Europeans are finally getting their act together into a formidable integrated market and free-trade zone.

So, how will all that affect our industry, and Grumman within that industry?

I'm told that the Soviets are now prepared to reduce their overall ICBM forces by perhaps as much as 50 percent. They intend to change the equation of deterrence to eliminate the possibility of a surprise first strike.

NATO is now discussing the probability that the Soviets will return a large number of tanks to European Russia while taking with them their river-bridging equipment. These moves would eliminate the threat of a short-warning conventional attack on NATO.

In return, I think you will see a Soviet demand that NATO substantially reduce its capability to launch a short-warning attack on the Soviet Union or its Warsaw pact allies. The most obvious demand would be that we not deploy stealth weapons.

The Soviets have a $60 billion investment in air defense systems which stealth technologies threaten to make obsolete. They can't afford to rebuild those defenses or to significantly deploy stealth aircraft themselves. The alternative is to negotiate stealth off the playing field.

These initiatives will occur at a time when the Europeans are creating an arms-length economic relationship with the United States and when, after the INF treaty was negotiated without their concurrence, they wonder if they can depend on the United States to protect them. In a recent poll, 80 percent of the West Germans no longer even perceive a military threat from the Soviet Union. The Europeans have no appetite for the kinds of investments required to replace U.S. forces, and so a negotiated de-escalation will be doubly appealing to them.

'We're the only company in the industry that still operates its own airfield — and we operate two.'

I think we can expect to see all the stealth programs stretched out and kept in research and development status as negotiating chips. This may well include the A-12, the stealth cruise missile, perhaps the ATF and possibly the B-2.

Now, within these changes — assuming that we've diagnosed them correctly in the main — how is Grumman positioned?

The combination of arms reduction, budget pressures and technical risk all make delays of the ATA and ATF inevitable, and I'm told that they've already begun. I expect one result will be that we'll continue making A-6s for a lot of years. The A-6 is the only airplane that can deliver weapons to targets farther away than a couple of 100 miles from the carrier, and so without it the entire carrier task force doesn't make much sense.

The other result, I think, will be that we'll sell the Tomcat-21 as the alternative to the naval ATF. The Tomcat-21 has going for it the issues of stealth as a bargaining chip, the budget pressures and technical risk.

Now that we've taken the intermediate range nuclear deterrent out of Europe, the ability to deploy our remaining greatly-outnumbered conventional forces effectively becomes even more important. That underlines the importance of the Joint STARS system. If we undertake conventional force reductions as well, Joint STARS grows in importance even more. Like AWACS and the E-2, Joint STARS will not carry weapons. It is not perceived as threatening, and so I don't think it's apt to become a bargaining chip, like stealth.

'If we undertake conventional force reductions as well, Joint STARS grows in importance even more.'

As both sides agree to scale down their ICBM arsenals, verification systems that keep watch to make sure the agreements are being honored will become crucially important. I think that means BSTS will surely continue to be funded. I also believe we have the right technology to win this competition, which would establish a whole new business for Grumman in military space.

The best information I have indicates that the manned space station will continue to be funded. I believe that official Washington recognizes that the goal of a cooperative mission to Mars with the Soviets could provide the equivalent of the "lift of a driving dream" that sustained the Apollo program. However, I expect to see the space station continue to struggle for adequate funding. Grumman's program support contract not only puts us in the position to manage the systems integration of the station — which reinforces our claim to be the premier integrator of flying systems — but it's a cost-plus services contract that offers a good deal of protection from NASA's funding uncertainties.

We've set three priority new business objectives to achieve over the next two years.

One, to convert the Joint STARS development project into a multi-billion dollar production contract.

Two, to sell the Tomcat-21 and project Grumman's fighter aircraft business another 15 years or more into the future.

Three, to win the BSTS and open up a new multi-billion dollar business.

I think we're in a good position to achieve all three of them.

While we're doing that, we also have some other objectives: we should be achieving at least a five percent pre-interest and pretax margin in all our business segments. We're making company-wide changes to improve our productivity.

'We're turning people loose to improve the way they do their own jobs.'

But what's even more important, I think, is that we're mobilizing the entire company in a systematic analysis of everything we do — from memos to maintenance to manufacturing — and we're turning people loose to improve the way they do their own jobs. We're already seeing results — documented productivity improvements — and we're sensing a new enthusiasm and commitment to the job as people at every level in the company begin to discover that they can take control of their own work.

And, of course, as they improve productivity we realize margin growth.

Another objective is to improve our balance sheet. The $200 million dollars of new debentures we marketed last month should carry us through this year, and into 1990 after which our cash requirements will begin to abate.

However, we have on our balance sheet some valuable assets that are not working nearly as hard for us as they could. We're the only company in the industry that still operates its own airfield — and we operate two. Over the next couple of years we expect to close the Bethpage field and form a partnership with an established developer to construct commercial office buildings. Our contribution would be the real estate, we'd avoid the capital gains taxes and share the rental revenues of the venture.

Grumman Shareholders' Meeting: Thursday, April 20 Bldg. 4, Bethpage

Grumman Software Tool For CADAM Users Offered In Commercial Market

Grumman recently signed a licensing agreement with Integrated Graphic Systems (IGS) Corporation of California. Under this agreement, IGS will commercially market Grumman's CADAM Online Performance Evaluation (G-COPE) system.

This software package, developed by Data Systems, is a performance evaluation tool for the CADAM (Computer Aided Design and Manufacturing) system. It is the first of many software packages Data Systems plans to sell commercially.

"This is the first time we have offered a stand-alone software package," says Ed Offenhartz, director of Strategic Planning. "Normally, we tailor software systems to meet specific needs. But there are a lot of companies out there that use CADAM."

CADAM is a system of hardware and software developed by Lockeed for computer-aided design and engineering. The system lets an engineer design on a computer with the freedom to quickly and easily alter the designs. Grumman's Engineering and Manufacturing System (GEMS) includes CADAM as a component.

G-COPE collects, organizes and graphically displays CADAM system performance data. Information such as how many people are on the system at one time and how long it is taking the system to respond to the users' commands can be gathered. "With G-COPE, problems in the CADAM system can be identified and corrected quickly and easily," says Dave Doucette, G-COPE's author and director of Interactive Systems.

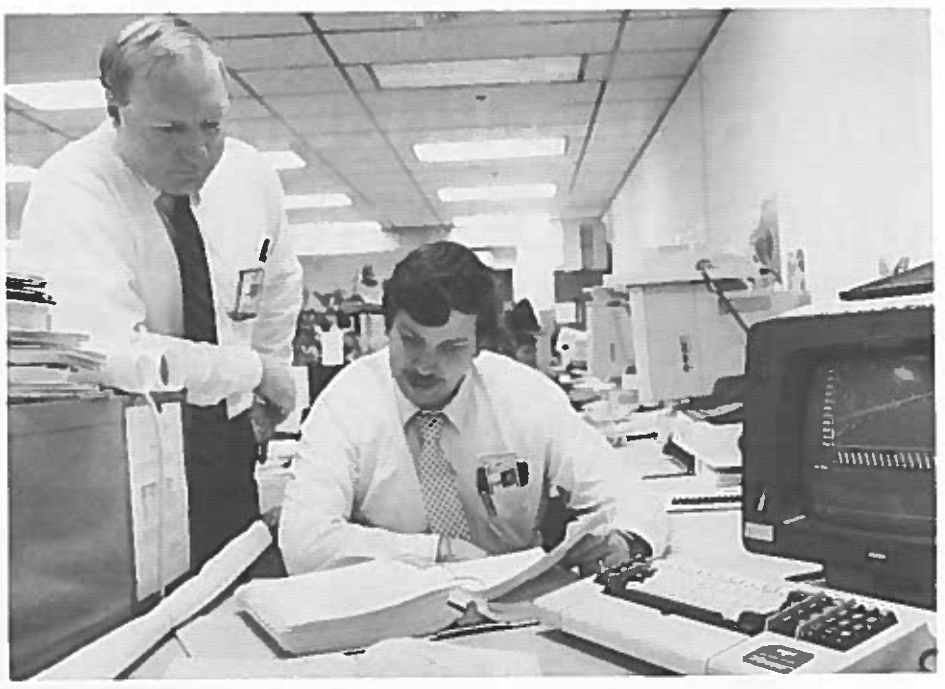
"As CADAM runs, tons of data are collected on how well the system is doing, including how all of the workstations and the main frame are running." explains Doucette. "When that data is printed out for analysis, the stack of paper can sometimes be six feet high. G-COPE condenses that information and produces charts and graphs."

In addition, G-COPE automatically organizes CADAM statistics into logical daily and weekly sets of information. "We can quickly access the most current statistics as well as accurate historical data for comparison," says Doucette. "For example, if there is a response time problem on a particular day, G-COPE can show us how many people are using the system at that time and then compare it to last week's usage at the same time. If it's the same, the problem may just be overload. If not, it lets us know if the problem is with the workstation or the main system."

"G-COPE was originally developed to better serve our own internal customers," says Jim Poplawski, a systems designer. "There are more than 500 GEMS workstations running at any given time at Grumman. The users demand that the system run at its best all the time. G-COPE helps us do that."

Grumman chose IGS to market G-COPE because of its experience. "They have the sales force, market potential and distribution ability to successfully sell our product," says Offenhartz.

Grumman will get royalties on everything IGS sells. Offenhartz says, however, that the dollar value is only part of the reward. "We want the exposure in the marketplace to enhance our systems integration business," says Offenhartz. "The profits from G-COPE sales will be reinvested into other software packages and hopefully marketed as well."



Entering A New Market. *Dave Doucette (L), director of Strategic Planning, and Jim Poplawski, a systems designer, have developed a performance evaluation tool for CADAM users. Called G-COPE, the system is the first stand-alone software package Data Systems will market commercially.*

Obituaries

Raymond J. Capelluto of ILS Electro/Mechanical Design, Melville, Aircraft Systems, died Feb. 12 at the age of 62. He had been with the company since 1966 and resided at 21 Rimlet Dr., Commack, N.Y.

Michael J. Cardella of Quality Management and Administration, Bethpage, Aircraft Systems, died Feb. 15 at the age of 59. He had been with the company since 1966 and resided at 126 King St., Hicksville, N .Y.

Fred G. Kenneth of Capital Progress Planning, Bethpage, Aircraft Systems, died Feb. 12 at the age of 60. He had been with Grumman since 1947 and resided at 102 Ketewamoke Ave., Babylon, N.Y.

Donald B. Stein of Systems Development, Bethpage, Space Systems, died Feb. 12 at the age of 60. He had been with the company since 1963 and resided at 2167 Regent Ct., Westbury, N.Y.

Dennis W. Wiederkehr of Facilities, Glen Arm, Aircraft Systems Division, died Feb. 6 at the age of 42. He had been with the company since 1965 and resided at 126 Haverhill Rd., Joppatowne, Maryland.

Grumman People Donated Over $833,000 To United Way

The results are in. Grummanites have once again made the 1988 United Way campaign a successful one. Throughout the company, employees donated more than $833,000.

"Grummanites come through every time," says Steve Dely, Grumman vice president and last year's United Way campaign chairman.

During the '88 campaign, Grumman retirees on Long Island were asked for the first time to contribute to the United Way. They gave over $9,500 and their donations are still coming in.

Recently, the United Way of Long Island presented Grumman with the Keystone Award, in recognition of outstanding employee participation.

"Grumman is the key to Long Island's United Way," says Janet Pierce, vice president, United Way of Long Island. "The employees have consistently given to Long Island's United Way since its inception in 1965. Because of them, we can provide so many services to people in need."

Many Grummanites volunteer each year to work on the United Way drive. Floyd Cisco, a staff assistant in Corporate Services, and Angie Conklin, an executive secretary in Grumman Corporation, were campaign co-managers in 1988. Cisco and Conklin received United Way's1988 Poster Award. This award is given to outstanding campaign managers. While this was Cisco's first United Way campaign, Conklin has worked on four drives.

"The campaign's success is the direct result of Grumman people reaching out as they always do to help others," says Conklin.

Both Cisco and Conklin will work on the 1989 drive.

Grumman Vice President Dean Cassell will be chairman. "It's a much better team when the members have been down the road before," says Cassell.

Campaign '88 concluded with several prize awards. Joe Carter of Building 3, Bethpage, won a trip to Hawaii, plus $1,000; Carol Pabst of Building 40, Melville, won a 19-inch color television set; Stan Yoniak, Jr., of Building 2, Bethpage, won a stereo system; and Charles Popeleski of Building 6, Calverton, won a microwave oven.

In addition to the Grumman prizes, Austin Travel donated a trip to the Bahamas. John Hanish Jr., of Building 110, Melville, won this prize. Grumman also gave Hanish $250 for spending money.

Recognition For Their Time. *Floyd Cisco and Angie Conklin recently received an award from United Way for being outstanding campaign managers. Cisco and Conklin were Grumman's campaign '88 co-managers. They have both volunteered to work again on this year's campaign.*

New System Makes Defining Work Faster, Cheaper, And More Accurate

What contains 155 computer programs and information on over a million aircraft and electronic parts? The newly installed Corporate Parts List, a giant parts database and product information system. It is one of the largest software packages ever developed at Grumman.

With a team of systems people from Aircraft Systems, Electronic Systems, and Data Systems working 'round the clock, the installation was finished over Washington's Birthday weekend. The new system is expected to save Aircraft Systems $1 million a year, just by processing information more efficiently in Holtsville's mainframe computers.

The Corporate Parts List replaces the old Manufacturing Operations Data System-Methods Module (MODS) and is a key part of Grumman's computerized factory-control system. Methods engineers use it to create or revise operation sheets for aircraft and electronic parts and assemblies. The system serves plants in Bethpage, Great River, Melville, and Calverton, Long Island; Benton Park, Pennsylvania; Salisbury and Glen Arm, Maryland; Houston, Texas; Milledgeville, Georgia; and Stuart and St. Augustine, Florida.

Developing the Corporate Parts List was a big undertaking: the first plans were drawn up in 1982, when Grumman first realized it would outgrow the old system.

"The data volume was causing a crunch on the computers and the old software had many design limitations, which affected system performance," says Mark DiFilippo, systems manager for Aircraft Systems Product Operations. "The new system speeds up the processing of our data, reduces computer run-time, and improves the accuracy of data. With Aircraft Systems facing computer-budgetary cuts, the timing couldn't be better."

The new Corporate Parts List also provides real-time data. The computer processing is done almost instantly, whereas the old system required as much as a day to update the information.

"Other systems are highly dependent on CPL data being complete," says DiFilippo. "Since CPL is part of an overall computer network, delays in processing information impacted work on the delivery floor. CPL gives us more breathing room."

About 600 people had to be trained on the Corporate Parts List system. Many were from the various Methods groups, who will use it most heavily. But others had to be trained because they will use the system for extracting information via inquiries on a network of over 1,400 computer terminals. These groups include Requirements Planning, Procurement, Program Management, Production Control, and Production Release and Analysis.

When generating an operation sheet, the Methods person enters all the information necessary to make a part. That includes the material to be used, any purchased parts such as nuts and bolts, specifications from the engineering drawing, scheduling and job charge information. The last item is the final destination — what stockroom it should go to, and how the people there should kit the part to build the assemblies.

Once CPL defines the part information, the MODS system can release the computerized work orders, which follow parts throughout the production cycle. Each time a shop mechanic performs work on the part, a record is entered into Grumman's Labor Collection System, which keeps track of the hours and job charge.

The Corporate Parts List is also linked to a host of other systems. Production Release and Analysis combines the information with a database containing parts routings and instructions for equipment operators. Another group uses the information to create computerized templates (parts patterns). A system in Corporate Audit validates job charges to ensure that the work order agrees with what's spelled out in Grumman's contract. Finally, Corporate Contracts puts the data in its bills to the government.

The result is that work orders are more complete and accurate. "When you call up a part, all the information is on screen," says David Orber, a methods engineer in Building 2, Bethpage. "You don't have to search through other databases to get it all, or contact other people. It also ensures you input all the necessary information when you set up a new job, and that it's correct. If you enter the wrong thing in the 'next assembly' field, for example, it will tell you so."

With such built-in checks, the Corporate Parts List will save on costly mistakes later on. "It ensures only current hardware is used when a kit is pulled," says Joe Grech, CPL project manager. "Before, the people in the shop had to refer to countless manuals and bulletins to make sure they used the correct hardware."

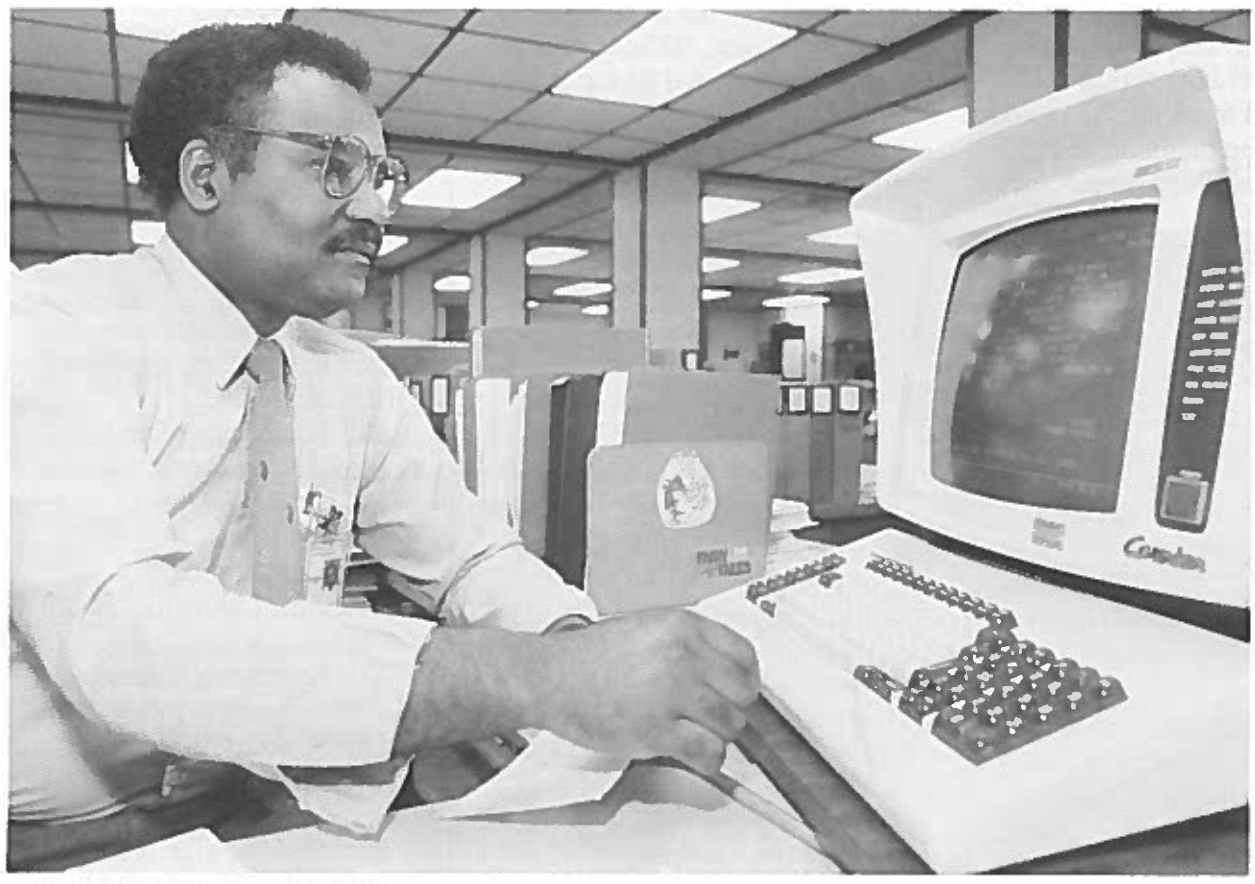
In addition to the full-time Aircraft Systems and Data Systems people who worked on the project, part-time site representatives got involved. "The conversion took 10 days start to finish," says Grech. "During the changeover, 21 million data segments were converted to the new software code. There also was extensive testing to make sure everything worked correctly once it was on line."

"CPL is so large, once you install it, you're committed, and it must function at 100 percent," says DiFilippo. "Many other computer systems at Grumman depend on information from it."

It's hard to believe, but until 1972, Grumman relied totally on manual paperwork. Every time a work order had to be written up, file clerks had to pull all sorts of records. Building 2 had a giant-size file room.

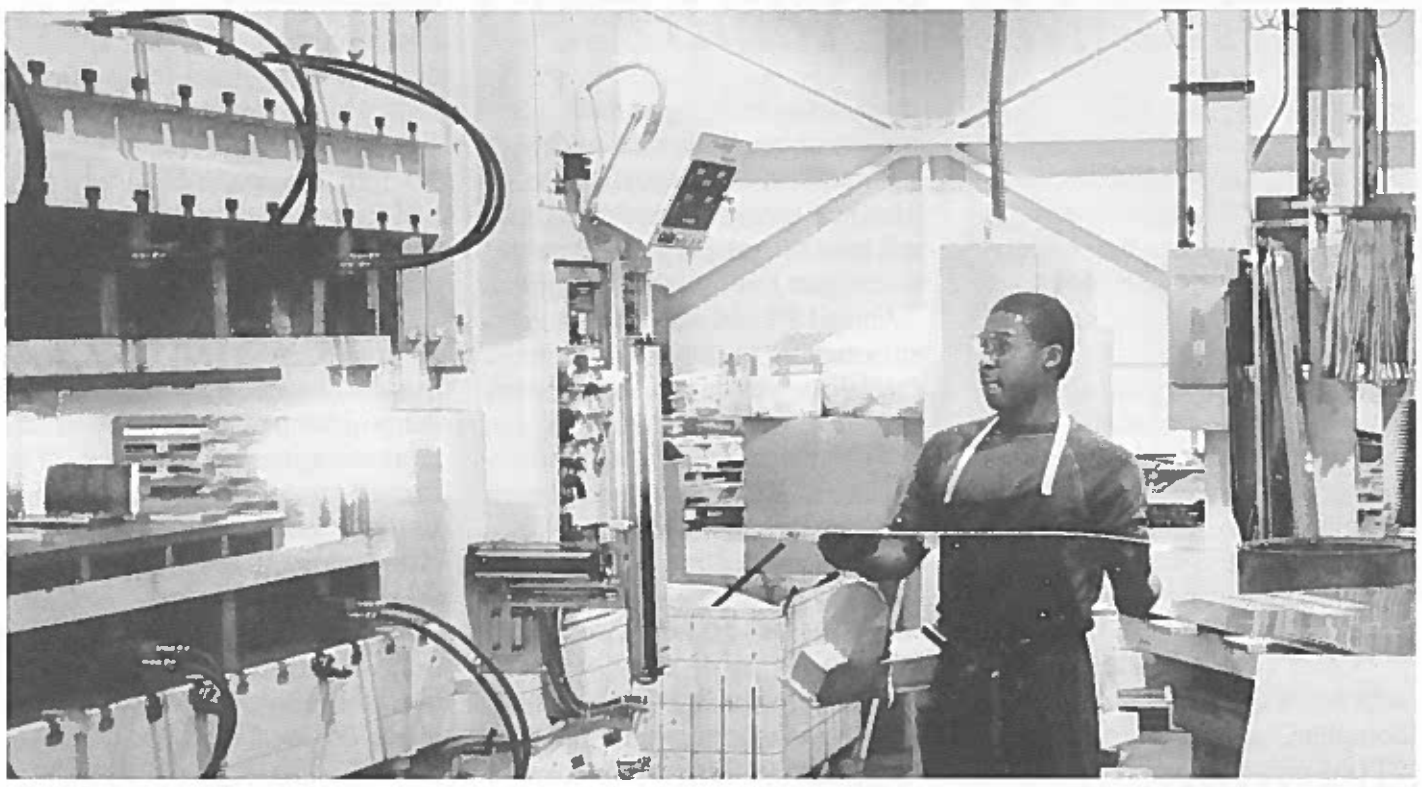
Next winter, the Aircraft Systems/Data Systems team will move Grumman one more step toward a paperless workplace. At that time, a long-awaited computer link will be established between Manufacturing and Engineering.

"CPL is an excellent example of teamwork across divisions," says DiFilippo. "I'm convinced it will contribute to Grumman's ability to do high-quality, competitive manufacturing."



Methodical Group. *In Building 2's Manufacturing Methods Department, Al Reddick sets up an operations sheet using the Corporate Parts List. The new system contains information on over a million aircraft and electronic parts. At R, (front to back) Helen Oakes, Bill Hinners, Phil Salina, and Bruce Matzinger revise parts information. (Photos by Rich Breunig)*

Another Two GQ Teams Go After Solutions



GQ Helps Ease The Move. *Rondell McCoy works at Grumman's Lexington, South Carolina, facility. When he feeds this sheet of aluminum into the press it will stamp out a door panel for a Grumman truck body. Fabrication of parts for Grumman Boats, Emergency Products and Grumman Olson will now be done in Lexington. A GQ team in Allied is helping to organize the transition to this centralized fabrication facility.*

The Grumman Quality Process is spreading to Grumman facilities throughout the country. A team from Allied is tackling a problem in Lexington, South Carolina. Another team in Aircraft Systems is working on a solution for St. Augustine.

Allied

While most Grumman Quality (GQ) teams have taken on existing problems, a group in Allied is using GQ to insure a smooth transition to a new business practice — centralized parts fabrication.

In July 1987, the division reorganized so that all detail parts for Grumman Boats, Emergency Products and Grumman Olson would be built in a new centralized location in Lexington, South Carolina.

The consolidation is expected to take about three years. However, the GQ team, made up of upper management from each of the Allied facilities, has been working on ways to help organize the transition.

"Each facility had been building many of the same parts," says Jay Witte, director of Operations, South Carolina facility. "In addition, none of the facilities were able to purchase the proper machinery and tooling because of the equipment's high cost. The redundancy was leading to higher costs for the company, lower quality, and inconsistent parts.

"Now items such as shelf brackets, cab skirts and hoods will all be made in one place," says Witte. "Building a high volume of similar parts will let us use fewer tooling setups. Plus, top quality equipment can be used to produce a better product at a much better price."

"Over 100,000 parts will eventually have to be moved," says Witte. "The GQ team is working as a partner with each of the facilities to help organize the process and keep it flowing."

"For example, the equipment at each facility has to be evaluated and either relocated to South Carolina or replaced," says Witte. "The way each part is made will also be examined to determine if there's a better way to build it."

The GQ group has charted and reviewed every step in the consolidation process. "The key is not to let the move interfere at all with production," says Witte. "That means making sure enough parts are kept in inventory at the different facilities, for example, while the move takes place."

The group has almost concluded its work. "The planning and scheduling has been done," says Witte. "Now each member will use the results of the GQ process to help ensure a successful transition."

Aircraft Systems

A team at Grumman's St. Augustine, Florida, facility is trying to find a way to make sure that part identification tags stay attached to the items they identify.

The tags are called verification and traceability (VAT) tags. "They verify that the aircraft is built to design," says Dave Baker, manager, Configuration Data Management.

"When you are doing aircraft modification work, it's important that certain parts and companion operation sheets get matching tags," says Baker. "When work on the part is completed its tag is stamped by Quality Control. That stamp means the part has been built in accordance with work order requirements. The mechanic will check the information on the tag before installing the part aboard the aircraft."

However, sometimes the tags are missing. When this happens, the part must be checked to make sure that the tasks called for in the operation sheet were completed.

There are over 1,000 tags on items for the A-6E TRAM. "When you consider that there are about 26 of these aircraft in flow at one time, even if only a small percentage of them are missing, that's a lot of tags to trace," says Baker.

After charting the path of the parts through production, the group found that many of the people handling the parts are not aware of the tag's importance. The team is considerting bringing a verification and traceability awareness program, now being developed for Calverton Operations, to St. Augustine.

The group is also trying to determine what items lose the tags most often. "We may find that those items should be identified for special handling," says Baker.

The Tags Tell All. *During modification of aircraft such as the A-6E TRAM, matching verification and traceability tags are attached to selected parts of the plane and the companion operation sheets. The tags verify that the aircraft is modified to design. A GQ team is working on a way to make sure these tags stay attached during production.*

Team Members

Aircraft Systems

Dave Baker, manager, Configuration Data Management.

Scott Drogue, supervisor, Cost Accounting.

Paul Haggey, manager, Security.

John Howard, manager, Contracts.

John Lee, manager, Quality Control Inspection.

Gene Morrison, manager, Flight Operations.

Tom Smith Jr., manager, Facilities.

Pat Wells, manager, KA-6D Manufacturing.

John WIlliams, manager, A-6E Manufacturing.

Allied

Len Rothenberg, president, Grumman Allied.

Bill Bruns, president, Emergency Products.

Kip Towl, president, Grumman Boats.

Jay Witte, director, Operations, Lexington, South Carolina.

Tim Gage, coordinator, Human Resources, LLV.

Dick Beechy, director, Manufacturing, Grumman Olson.

Ed MacKay, vice president, Engineering, Grumman Olson.

Frank Rizzo, controller, Grumman Allied.

EIP Annual Meeting

The Grumman Employee Investment Plan will hold its annual meeting on Thursday, March 23, from 5 to 7 p..m. in the Headquarters' auditorium.

I wish to have the following topic discussed:.....
.....
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.....
.....

Mail to: EIP, C15-GHQ

A Perfect Wrap Every Time

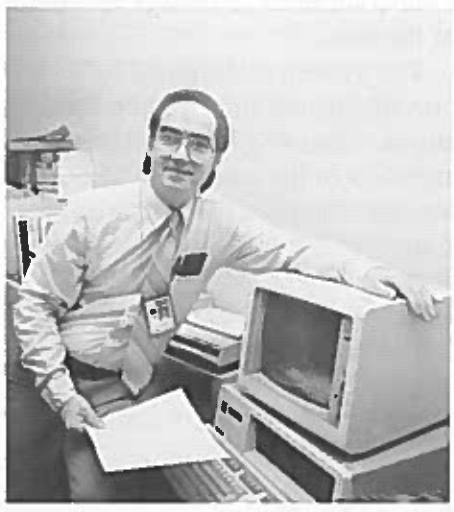
"Technology changes every day," says Bill Belcher, a test engineer in Electronic Systems. "I'm always trying to think of new ways to help Grumman stay competitive."

Belcher is a 10-time Project Sterling award winner. His latest idea suggested a quicker way of troubleshooting wire-wrapped electronic circuit boards. His new software package, called Netshow, saved the company over $85,000 last year and earned him a prize of 242 shares of Grumman stock, worth over $5,000.

"A wire-wrapped circuit board is built exactly how it sounds," explains Belcher. "The boards are made up of thousands of pins wired to form circuits. Each pin on the board has a position number and every wire is assigned a circuit."

To make sure the boards have been properly wrapped, a bed-of-nails test is performed. During this test, the circuit board is placed on a bed of about 30,000 nails. "These nails can electronically pinpoint problems on the board such as a short circuit, wire fraying or improper wire routing."

Belcher's software package is used when the bed-of-nails test indicates a problem. "If there is a short in two wires, for example,"



A Winning Troubleshooter. *Bill Belcher, a test engineer in Electronics Systems, received over $5,000 worth of Grumman stock in 1988 as a top Project Sterling award winner. He suggested a quicker way of locating problems on wire wrapped electronic circuit boards.*

says Belcher, "the bed-of-nails test will display the circuit identification number, but the test technician still has to locate that circuit on the board and follow its route to the problem. This used to mean spending a lot of valuable time studying a wire list of the board to locate termination pins."

The new software draws a picture of the circuit board and outlines the path of each wire. Then it highlights the problem wires. "A printout of the drawing and a report explaining where and what kind of problem exists is also supplied," says Belcher. "This way the test technician can take the board to another location to work on it and leave the test area available for another board."

Although Belcher developed the system in Great River, it is now used at Electronic Systems' Benton Park, Pennsylvania, facility where most of the electronic testing takes place.

Belcher cashed in his Grumman stock shortly after receiving it. He donated a large percentage of the money to several families experiencing some hard times. "We have a tradition in my family," says Belcher. "When you have a windfall, give some of it away and another will always follow."

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Grumman Hero Uses Plane Talk To Help Save Life Of Little Boy

It was 4:30 a.m. Grummanite Rich Mercadante was sound asleep. Little did he know that at the same time, less than a mile away, 4-year-old Robbie was choking to death. Mercadante would be the one to save his life.

Mercadante, a senior engineer in Aircraft Systems, has been an emergency medical technician in St. James, New York, for over two years. He not only used his medical training to save the boy's life, but his experience at Grumman came in handy as well.

"The emergency call said there was a 4-year-old boy unconscious and not breathing," explains Mercadante. "When they gave the address, I realized I was only a mile away. I went directly to the child's house rather than meet the ambulance at the firehouse."

When Mercadante got there, he found Robbie conscious but very scared.

"A virus had caused his throat to close up. He was panicking," said Mercadante. "The more he panicked the more he couldn't breathe."

His mother had taken him into the bathroom and turned on the hot water for steam. This was helping a little, but he needed oxygen in a hurry. "I brought in a tank from my car, but I knew if I tried to put it on him he would panic even more.

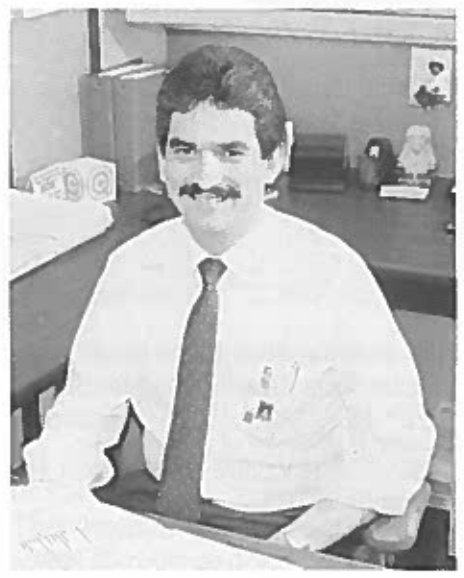
"So my wheels started turning," said Mercadante. "I asked him if he liked jet airplanes. His face lit up and he nodded yes. Then I asked him if he knew what the pilots wore when they flew. I mentioned the helmet, glasses and a mask. I told him I happened to have a mask with me and asked if he would he like to try it on. When he nodded yes, I applied the oxygen. Within seconds, his wheezing stopped."

When one of the other EMT's attempted to take Robbie's blood pressure, he got scared and started to choke again. "I asked him if he knew that a pilot's jumpsuit fills up with air at high speed. I told him I would show him how it felt. When I took his blood pressure he thought it was all part of the game."

Robbie eventually began to breathe normally. "His parents were as scared as he was so I rode with them in the ambulance to the hospital. The boy slept the entire way."

When they arrived at the hospital, Mercadante told Robbie he could keep the mask as a souvenir.

Robbie's parents were very grateful to Mercadante. So much so that they wrote to Grumman Chairman John O'Brien. "There are a lot of emergency medical technicians who work at Grumman," says Mercadante. "We all do what we have to to save a life. But it does make you feel good to have someone notice."



A Real Life Saver. *Rich Mercadante, a senior engineer in Aircraft Systems, is a volunteer emergency medical technician. He recently helped save a little boy's life by talking with him about airplane pilots and the equipment they use. The little boy let Mercadante apply an oxygen mask because it was like the one pilots wear.*

Personals

I would like to thank my friends in VM Technical Support for their overwhelming support during my husband's illness. I would also like to thank my co-workers for their sympathy and donations to the Cancer and Leukemia Society in memory of my husband Frank. **Gina Moscato**

My family and I would like to thank all my co-workers from Design Support for their thoughtfulness and support during the recent loss of my mother. **Gabriel Bascianelli**

My family and I sincerely wish to thank friends and co-workers for their concern, support, and kind expressions of sympathy during the recent loss of my husband Don. **Shirley Stein**

My family and I would like to extend our sincerest thanks to all our Grumman friends for their support and sympathy during the recent illness and loss of our son, husband and father Dennis. Your efforts have provided a deeply appreciated measure of comfort. **Bill, Gloria, Wanda and Alice Wiederkehr**

We wish to express our thanks and appreciation to all of our friends and co-workers for their support, concern and love shown to us during the recent loss of my husband Ray. **Evelyn Capelluto and Family**

My children and I would like to thank our friends and co-workers for their kind expressions of sympathy and support during the recent loss of my wife Maxine. **Mike DiFrancesco**

My family and I wish to extend our sincere appreciation to fellow employees for their sympathy, prayers, beautiful flowers and support during the recent loss of my mother. **Sal DeLuca**

Retiree Obituaries

Bernard J. Arnold of 5D Alden Ct., Whiting, New Jersey, died Feb. 5, 1989. He retired in 1968.

William C. Autry of 103 South Armstrong Avenue, Ventura, California, died Feb. 3, 1989. He retired in 1978.

Albert C. Brecht of 460 N. Civic Dr., Walnut Creek, California, died Feb. 2, 1989. He retired in 1977.

Alfred M. Christenson of 512 Chestnut Street, Lindenhurst, New York, died Feb. 8, 1989. He retired in 1988.

Giov D'Evangelista of 24B Bristol La., Taylor, Pennsylvania, died Feb. 10, 1989. He retired in 1984.

George R. Dubsky of 3 Harriett La., Plainview, N.Y., died Jan. 24, 1989. He retired in 1971.

Joseph E. Grams of 261 Westview Ct., Melbourne, Florida, died Feb. 2, 1989. He retired in 1977.

John Lavoie of 20 Dewey Ave., Windsor, Vermont, died Jan. 10, 1989. He retired in 1975.

Alphonse Liguori of 2276 Lake of Melbourne Drive, Melbourne, Florida, died Sept. 24, 1988. He retired in 1986.

Benjamin A. Majeski of 27 Elizabeth St., Valley Stream, N.Y., died Feb. 20, 1989. He retired in 1963.

George Markenson of 99-02 67th Avenue, Rego Park, New York, died Feb. 7, 1989. He retired in 1977.

Herbert V. O'Rourke of 555 Washington Ave., West Hempstead, N.Y., died Feb. 13, 1989. He retired in 1970.

Joseph A. Reckert of 66 Ft. Washington St., New York, N.Y., died Jan. 18, 1989. He retired in 1971.

Fred C. Rowley of 76 Knollwood Rd., Huntington, N.Y., died Feb. 8, 1989. He retired in 1977.

Benjamin Tauber of 45 Williams St., Copiague, N.Y., died Feb. 21, 1989. He retired in 1983.

Thomas F. Weiss of 334 Glenmore La., Bayport, N.Y., died Feb. 11, 1989. He retired in 1984.

William Zander of Fairfax Nursing Center, P.O. Box 426, Fairfax, Virginia, died Jan. 17, 1989. He retired in 1970.

Grumman News Briefs

Use It Or Lose It

A reminder: if you have money left in your 1988 supplemental health care flexible spending account, you have until March 31 to file claims for any unreimbursed expenses you had last year.

Your health care FSA may be used to pay for a host of expenses, as well as the unreimbursed portion of covered services. Among those are: insurance plan deductibles and co-payments; routine physicals; cosmetic surgery; immunization shots; health care-related transportation costs; and eye care, including exams, treatment, frames, lenses, and contact lenses.

Uninsured dental care may also be reimbursed with FSA money. That includes deductibles, expenses in excess of the maximum limits of an insurance plan, cosmetic dentistry, and orthodontia.

Any health expense that is eligible as an Internal Revenue Service deduction can be reimbursed through the FSA (refer to IRS Publication No. 502). But the expenses for which you use your FSA cannot also be itemized on your tax return for that same year.

Dependent day-care expenses for 1988 are eligible for reimbursement through March 31 under the Dependent Care FSA. Refer to IRS Publication No. 503 for more details.

The FSA covers your out-of-pocket expenses, so for either type of FSA, you must pay the bill first. FSA withdrawal request forms should be forwarded to The Travelers, with proof of payment. For further information, contact The Travelers, (516) 296-2800.

This Data Systems Bid's A Crime Buster

Suffolk County, New York, recently accepted best and final offers from the last two competitors for the development of a criminal justice computer system. Grumman Data Systems is a subcontractor to Unisys on one of the bids.

The system is designed to provide instant information about any incident to all public safety agencies in the county. It will tie together the police department, the district attorney's office, and the departments of fire, rescue, and emergency services.

Twenty-one contractors had originally entered the competition. Planning Research Corporation is the other finalist.

Update Your Status Quo

Are you receiving Grumman correspondence, letters, annual reports, and W-2 forms? If not, you may not have submitted an Employee Status Change form indicating your current company address.

If you've moved or changed your phone number, ask your administrator for a form and forward it to Personnel Records, E09-GHQ.

Appointments

Corporate Services Division— *Administrative Services:* Robert F. Sanginario Jr., manager, Document Support Services; Richard J. Gaudet, manager, Records and Systems Management; Michael F. DeSanto, director, Administrative Support; Vincent Maiorana, deputy director, Administrative Support; David F. Schrader, director, Food Services; Edgar A. Traina, deputy director, Food Services

Personnel: Gerard McMahon, manager, Employee Services.

Aircraft Systems Division — *Technical Operations:* Ronald Dahl, group head, Crew Systems/ Equipment Integration; Vincent Volpe, technical specialist, Mechanical Design; Milton Farkas, group head, Material Review Engineering; Mina Gregory, engineering specialist, Computer Systems Architecture; William L. Lockwood Jr., principal engineer, Systems Development and Integration; Jerome Lamagna, project leader, E-2C Advanced Development; Ralph T. Nelson, engineering manager, F-8.

Space Systems Division — *Boost Surveillance and Tracking System (BSTS):* Dr. Kenneth A. Rathjen, director, Program Development; Kirk D. Keer, general manager, Irvine Operations.

Travellers, Take Note

Grummanites are reminded that airline discount coupons received during business trips should be sent to Travel Operations, A05-117. They will be used for future business trips.

Readership Survey

We don't want to do all the talking. We'd like to know what you think about the things you see in these pages. Your comments, suggestions and complaints are welcomed. Please take a few minutes and give us your opinions.

Article	Great	Good	Poor	Didn't Read
F-14D Task Teaming (P. 1)	[ ]	[ ]	[ ]	[ ]
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[ ] I am a retiree.

Mail to: Grumman World, A22-GHQ
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Boats Beginning. *Someday, somebody will have a lot of fun in these Grumman pontoon boats. At Grumman's Arkadelphia, Arkansas, plant, Bobby George and Steve Dyess weld end brackets onto the boats, which have become popular sellers.*